Amendment to Claims

1. (withdrawn without prejudice) A method of forming a three-dimensional object in a layerwise manner from a build material, the method comprising:

providing object layer data;

forming layers of the three-dimensional object according to the object layer data;

providing at least one substantially uniform sheet of air flow across the layers of the three-dimensional object to remove heat from the layers of the three-dimensional object.

2. (withdrawn without prejudice) The method of claim 1 further comprising:

forming the layers of the three-dimensional object by dispensing the build material from a dispensing device; and

directing the uniform sheet of air flow away from the dispensing device.

3. (withdrawn without prejudice) The method of claim 2 further comprising:

establishing reciprocal motion in a main scanning direction relatively between the three-dimensional object and the dispensing device; and

wherein the substantially uniform sheet of air flow is directed substantially parallel to the main scanning direction.

4. (withdrawn without prejudice) The method of claim 2 further comprising:

establishing motion in a secondary scanning direction relatively between the three-dimensional object and the dispensing device; and

wherein the substantially uniform sheet of air flow is directed substantially parallel to the secondary scanning direction.

5. (withdrawn without prejudice) The method of claim 2 further comprising:

establishing a substantially undisturbed pocket of air around the dispensing device by directing the air flow away from the dispensing device.

6. (withdrawn without prejudice) The method of claim 1 wherein the uniform sheet of air flow is established by directing a flow of air along a air duct, the air duct having a protrusion on the end of the air duct, the protrusion diverting the flow of air away from the air duct and towards the layers of the three-dimensional object.

7. (withdrawn without prejudice) The method of claim 1 further comprising:

providing at least two substantially uniform sheets of air flow across the layers of the three-dimensional object wherein the uniform sheets of air flow are established by directing a flow of air along a air duct having an inlet end and exit end, the air duct having a protrusion on the exit end, the protrusion diverting the flow of air away from the air duct and toward the layers of the three-dimensional object.

8. (withdrawn without prejudice) The method of claim 7 further comprising:

forming the layers of the three-dimensional object by dispensing the build material from a dispensing device; and

establishing a substantially undisturbed pocket of air around the dispensing device by positioning the substantially uniform sheets of air flows on opposed sides of the dispensing device and diverting each sheet of air flow away from the dispensing device.

9. (withdrawn without prejudice) The method of claim 8 further comprising:

establishing reciprocal motion in a main scanning direction relatively between the three-dimensional object and the dispensing device; and

wherein the substantially uniform sheets of air flow are directed in opposite directions that are substantially parallel to the main scanning direction.

10. (withdrawn without prejudice) The method of claim 8 further comprising:

establishing motion in a secondary scanning direction relatively between the three-dimensional object and the dispensing device; and

wherein the substantially uniform sheets of air flow are directed substantially parallel to the secondary scanning direction.

11. (previously presented) An apparatus for forming a three-dimensional object in a layerwise fashion from a build material, the apparatus comprising:

a computer controller for processing data to establish object layer data;

a means for supporting the three-dimensional object; and

a means for forming layers of the three-dimensional object from the build material according to the object layer data;

a means for cooling the layers of the three-dimensional object by establishing at least one uniform sheet of air flow across the layers of the three-dimensional object.

12. (previously presented) The apparatus of claim 11 wherein the build material is dispensed from a dispensing device and the substantially uniform sheet of air flow is directed away from the dispensing device.

13. (previously presented) The apparatus of claim 12 wherein the means for forming the layers of the three-dimensional object establishes reciprocal motion in a main scanning direction relatively between the three-dimensional object and the dispensing device and the substantially uniform sheet of air flow is directed substantially parallel to the main scanning direction.

14. (previously presented) The apparatus of claim 12 wherein the means for forming the layers of the three-dimensional object establishes motion in a secondary scanning direction relatively between the three-dimensional object and the dispensing device and the substantially uniform sheet of air flow is directed substantially parallel to the secondary scanning direction.

15. (previously presented) The apparatus of claim 11 wherein the means for cooling the layers of the three-dimensional object establishes at least two uniform sheets of air flow across the layers of the three-dimensional object.

16. (previously presented) The apparatus of claim 15 wherein the means for forming the layers of the three-dimensional object establishes reciprocal motion in a main scanning direction relatively between the three-dimensional object and the dispensing device, and the means for cooling the layers of the three-dimensional object directs the substantially uniform sheets of air flows in opposite directions that are substantially parallel to the main scanning direction.

17. (previously presented) The apparatus of claim 15 wherein the means for forming the layers of the three-dimensional object establishes motion in a secondary scanning direction relatively between the three-dimensional object and the dispensing device, and the means for cooling the layers of the three-dimensional object directs the substantially uniform sheets of air flows substantially parallel to the secondary scanning direction.

18. (currently amended) A cooling ~~system for~~ system in an apparatus for forming three-dimensional objects, the cooling system removing heat ~~from the~~ from layers of a three-dimensional object formed in a layerwise manner from a build material selectively deposited from at least one orifice in a build chamber, the system being within and in fluid flow communication with the build chamber and comprising:

at least one fan for generating a flow of air through the build chamber;

at least one air duct having an inlet end and an exit end opening into the build chamber, the air duct being in communication with the fan for receiving the flow of air at the inlet end, the air duct shaping the flow of air into a uniform sheet of air flow and delivering the uniform sheet of air flow from the exit end across the layers of the three-dimensional object in the build chamber.

19. (original) The cooling system of claim 18 wherein the air duct is curved so as to bend the air flow as it travels from the inlet end to the exit end of the air duct.

20. (original) The cooling system of claim 18 comprising a plurality of fans for generating the flow of air.

21. (original) The cooling system of claim 18 wherein the fan is selected from the group consisting of axial fans, centrifugal fans, mixed flow fans, and cross flow fans.

22. (original) The cooling system of claim 18 wherein the air duct has a protrusion on the exit end, the protrusion diverting the uniform sheet of air flow away from the air duct and towards the layers of the three-dimensional object.

23. (original) The cooling system of claim 22 wherein the uniform sheet of air flow has a thickness and the air duct has a second protrusion upstream from the protrusion on the exit end of the air duct, the second protrusion widening the thickness of the uniform sheet of air flow adjacent the protrusion on the exit end of the air duct.

24. (original) The cooling system of claim 22 wherein the air duct has guide walls extending between the inlet end and exit end.

25. (original) The cooling system of claim 22 wherein the air duct comprises one containment wall in cooperation with the protrusion on the exit end for shaping the flow of air into the uniform sheet of air flow.

26. (original) The cooling system of claim 25 wherein the containment wall is substantially straight.

27. (original) The cooling system of claim 25 wherein the containment wall is curved so as to bend the air flow as it travels from the inlet end to the exit end of the air duct.

28. (original) The cooling system of claim 27 wherein the air flow is bent as it travels from the inlet end to the exit end of the air duct through an angle of about 90 degrees or less.

29. (original) The cooling system of claim 27 wherein the air flow is bent as it travels from the inlet end to the exit end of the air duct through an angle of greater than about 90 degrees.

30. (original) The cooling system of claim 22 wherein the air duct comprises two containment walls in cooperation with the protrusion on the exit end for shaping the flow of air into the uniform sheet of air flow.

31. (original) The cooling system of claim 30 wherein the air duct has two exit ends and the containment walls form two uniform sheets of air flows delivered from the exit ends across the layers of the three-dimensional object.